CHAPTER 42

MICROBIOLOGY

Doctoral Theses

324. BHAGAT (Neeru)
Detection of Virulence Genes and other Pathogenicity-Related Factors in Yersinia Enterocolitica Isolated from India.
Supervisor : Prof. J. S. Virdi
Th 16550

Abstract

Detects the presence of a number of virulence-ralated genes in strains of Y. Enterocolitica biovar 1A isolated from India and to analyze their distribution in the light of source (clinical versus non-clinical) of isolation as well as clonal groups. Charaterizes the urease genes in biovar 1A strains of Y. enterocolitica and to assess their role in virulence.

Contents

325. DIWANIYAN (Sarika)
Laccase From Basidiomycetous Fungus Crinipellis sp.RCK-1: Production, Purification, Characterization and its Applications
Supervisor : Prof. Ramesh Chander Kuhad
Th 16415

Abstract

Describes the isolation, production optimization and immobilization of a Laccase from newly isolated basidiomycetous fungus, as more studies of laccase production and immobilization techniques at lower costs are needed to improve the industrial application of this enzyme. Optimization of laccase production was attempted using response surface methodology(RSM) to gain important inormation regarding the

optimum level of each growth parameter along with its interactions with other variables, and their effects on enzyme yeild. The physiocochemical and molecular characterization of the enzyme was carried out to assess its efficacy for for different applications.

Contents

1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Observations and results. 5. Discussion. 6. Summary and conclusions. Bibliography.

326. DUTT (Kakoli)
Rennet From Bacillus Subtilisi Production, Biochemical Characterization, Scale Up and its Application in Cheese Making.
Supervisor : Prof. R. K. Saxena
Th 16412

Abstract

The investigation was designed and executed to obtain a potent bacterial rennet producer. Attempts were made to process optimize the rennet production and scale up the production process to 300 L fermentors. Purification and characterization were the other studies carried out. The rennet was finally evaluated for Mozzarellas cheese making.

Contents

1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Observations and results. 5. Discussion. 6. Summary and conclusions. 7. Future Prospects. Bibliography.

327. GUPTA (Pritish)
Lipase from Thermomyces Lanuginosus : Process Optimization, Purification, Characterization, Scale up and Applications.
Supervisor : Prof. R. S. Saxena1
Th 16551

Abstract

Gives a comprehensive account of the screening and selection of the potent lipase producing fungi Identification and characterization of the selected fungus has been described. A

detialed account of various strategies and procedures followed for purification of this lipase is presented. Describes the immobilization of this lipase by conventional, cross linking and binary immobilization technique. Gives in detail the properties and kinetics of this lipase. Evaluaes of the various potentials and industrial applications of this lipase with special emphasis on industries like food, oleo-chemicals, pharmaceutical, detergent and biodiesel production.

Contents

1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Observations and results. 5. Discussion. 6. Summary and conclusions. Bibliography.

328. GUPTA (Shefali)
Production, Characterization, Cloning and Expression of Pectinase From Bacillus Subtilis RCK.
Supervisor : Prof. Ramesh Chander Kuhad
Th 16418

Abstract

Concludes that the process of production of high titers of an alkalo-thermo-stable pectinase from B. subtilis RCK under submerged and solid state fermentation has been optimised. The pectinase was purified to homogencity with a high specific activity. Immobilization of pectinase on varied supports improved the biochemical properties of enzyme. The pectinase gene (1.26kb) from B. subtilis RCK was successfully amplified and subsequently cloned and expressed into E. coli. B. subtilis RCK pectinase has shown potential in fibre retting. Therefore, pectinase would be useful in developing potential technologies for degumming of bast fibres.

Contents

1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Results. 5. Discussion. 6. Summary and conclusions. 7. Bibliography and Appendices.

329. PARDEEP KUMAR
Production and Characterisation of a Neutral Glucoamylase of the Thermophilic Mould Thermomucor Indicae-Seudaticae.
Supervisor : Prof. T. Satyanarayana
Th 16419

Abstract

Glucoamylase produced by T. indicae-seudaticae efficiently saccharified 75% of raw sorghum starch. Higher rates of starch hydrolysis were acheives with starch pre-liquefied with a-amylase. The supplementation of glucoamylase in doughnut and bread formulations resulted in improved sugar availability, and, hence, lesser fermentation time, increased softness, loaf volume and shelf life of bread and doughnuts. The observations recorded in this investigation highlighted several important features of glucoamylase of T. indicae-seeudaticae that could be exploited in commercial strach hydrolysis. Optimisation of culture variables for glucoamylase production using alginate-immobilised T. indicae-seudaticae and random mutagenesis and selection enabled higher glucoamylase yields. Cloning fulllength glucoamylase gene and its sunsequent over-expressions would allow overproduction of this thermostable and neutral glucoamylase.

Contents

330. S. SURESH KUMAR
Extracellular Lipase From Trichosporon Asahii MSR 54 : Production, Characterization and its Applications.
Supervisor : Prof. Rani Gupta
Th 16414

Abstract

Lipases (triacyglycerol acylhydrolase, E.C. 3.1.1.3) catalyze the hydrolysis of triglycerides to free fatty acids and glycerol. They catalyze esterification, interesterification, acidolysis, alcoholysis and aminolysisin addition to the hydrolytic activity on triglycerides. Lipases show extreme versitality with respect to fatty acyl chain length specificity, regiospecificity and chiral selectivity. Thus, these multifaceled enzymes have tremendous potential in area such as food technology,

detergent, chemical industry and biomedical sciences. Lipase are ubiquitous in nature, however, microbial lipases hold special biotechnological relevance qwing to their unique properties, ease of bulk production and emenability to molecular manipulations. The increasing demand for biotechnologically useful lipases has propelled research towards search of novel lipases strains having property of fatty acid speciaficity and enantioselectivity.

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